

REMARKS

Applicant has carefully considered the final Office Action dated December 29, 2006 and provides the following response thereto. In this amendment, Claims 1-30 are canceled. Claims 31-48 are new. Accordingly, Claims 31-48 are presented for consideration. No new matter has been added.

CLAIM REJECTIONS UNDER 35 U.S.C. SECTION 112

In the Office Action, Claims 11-30 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner contended that is unclear how the body of Claims 11 and 21 recite a method and system for controlling or optimizing a process. The Examiner also stated that the present invention discloses the optimization of a process using the work ability of personnel and correlating this factor to the probability of success of the work team but that Claims 11 and 21 do not accomplish this method or system. Applicant respectfully disagrees.

Although the present invention does relate to a method and apparatus for controlling and optimizing a process, the invention is not limited to using the work ability of personnel and correlating this factor to the probability of success as characterized in the Office Action. As explained specifically in the disclosure, "[T]he solution of the invention can be used in analyzing different strategic processes, such as to make or buy analysis or development analysis of a company...the solution of the invention is also applicable with processes, where the process parameters , such as temperatures, pressure,. content, etc. are measured." (Application, pg. 15, line 33 through pg. 16, line 26).

Applicant respectfully submits that the body of new Claims 31 and 40 clearly do accomplish a method and apparatus for controlling and optimizing a process, respectively. In view of the cancellation of Claims 11 and 21, Applicant respectfully requests that the rejection under 35 U.S.C. § 112 of Claims 11 and 21 be reconsidered and withdrawn.

Claims 15 and 25, which recite, in part, “determining a radius length”, were rejected as being unclear. Applicant respectfully disagrees with this rejection, and, in any event, submits new Claim 35 which recites, in pertinent part, “determining a radius length for said equidistant scale by multiplying a predetermined maximum value associated with said plurality of initial information by a number of said plurality of initial information.”, which enhances the clarity of the passage referred to by the Examiner. New Claim 44 includes a similar recitation.

An example of calculating the equidistant scale’s radius length is discussed in connection with FIG. 5. As explained in that example and shown in formula 4 of the disclosure, the length of the scale radius is calculated by multiplying the number of group members to be balanced by a chosen maximum value. (Application, pg. 10, lines 5-15). As such, new Claims 35 and 44 are definite and distinctly claim subject matter that Applicant regards as the invention. In view of Applicant’s cancellation of Claims 15 and 25, Applicant respectfully requests that the rejection of Claims 15 and 25 be reconsidered and withdrawn.

In the Office Action, Claims 16 and 26 were rejected as being indefinite. Applicant has canceled Claims 16 and 26 and respectfully requests that the rejection of Claims 16 and 26 be reconsidered and withdrawn.

In the Office Action, Claims 17 and 27 were also rejected for being allegedly unclear as to how line segments are summed and then divided by a radius length resulting in a probability value. Applicant respectfully disagrees. New Claim 36 recites, in part, “summing vectorally said plurality of line segments plotted on said scale; and dividing said vector sum by said radius length” to arrive at a probability value. The language of the new claim enhances the clarity of the offending passage. New Claim 45 includes a similar recitation.

An example of summing vectorally the line segments plotted on the scale of FIG. 5 is discussed in connection with formula 6 of the disclosure. As explained in that example, individual competence is represented by each line segment. The mathematical formula for

balanced total competence for an entire group is shown in formula 6 and calculated as follows:

$$K_{RI} = \sum_{i=1}^{N_k} P_i * \sin\left(\frac{\pi}{8} * S_i\right)$$

where

P_i is the measured potential of each team member represented by a line segment length on the graph;

S_i is the commitment value for each team member;

$\frac{\pi}{8}$ is the angle interval of the scale; and

$(\frac{\pi}{8} * S_i)$ is the angle of the line segment.

The balanced total competence K_{RI} is shown graphically on the vertical axis of the scale as a projection of the vector sum of potential segments of line $P_A \dots P_D$. (See Application, pg. 10, lines 5-15 and pg. 12, lines 10-19).

The probability of attaining a goal is then calculated according to formula 7. In the example disclosed, because both potential and commitment degree can influence competence, the probability of attaining the goal is calculated by dividing the balanced total competence K_{RI} by the length of the scale radius. (Application, pg. 12, lines 21-26).

In view of the cancellation of Claims 17 and 27, Applicant respectfully requests that the rejection of Claims 17 and 27 be reconsidered and withdrawn.

CLAIM REJECTIONS UNDER 35 U.S.C. §101

In the Office Action, Claims 11-30 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Applicant respectfully disagrees.

The present invention relates to a method and system for controlling and optimizing a process. For the first time, a process can be controlled by plotting line segments representing initial information on a dualistic equidistant scale at discrete angles based on control information and modifying the initial information and control information by adjusting the line segments in response to a calculated expected outcome. In one preferred embodiment, the equidistant dualistic scale is formed having a radius length based on characteristics of the initial information and the expected outcome is calculated using vector arithmetic. For example, as disclosed in the application, in one preferred embodiment, the expected outcome is calculated by summing each of the line segments and dividing the sum vector by the radius length of the scale (Application, page 11, lines 10-31).

New independent Claim 31 recites a method that includes (a) collecting a plurality of initial information based on predetermined criteria associated with a process, each of said plurality of initial information having a first criteria value associated therewith; (b) collecting a plurality of control information for controlling said process, each of said plurality of control information having a second criteria value associated therewith; (c) forming a plurality of line segments representing said plurality of initial information, each of said plurality of line segments having a length corresponding to said first criteria value of each of said plurality of initial information; (d) plotting each of said plurality of line segments on an equidistant dualistic scale at an angle corresponding to at least one of said second criteria values; (e) calculating a probability value for achieving an expected result from said process using said plotted line segments; (f) modifying at least one of said initial information and control information by adjusting said plotted line segment on said equidistant scale in response to said probability value; and (g) controlling said process using said modified at least one initial information and control information. Independent Claim 40 recites a similar recitation.

It is understood that to meet the requirements of 35 U.S.C. §101 “(t)he claimed invention as a whole must accomplish a practical application. That is, it must produce a

useful, concrete and tangible result.” As noted above, new Claim 31 clearly recites a method for controlling and optimizing a process that produces a useful, concrete and tangible result. For example, in one preferred embodiment, the invention provides a reliable procedure and system for measuring initial and control information, such as individual competence and commitment to set goals, respectively, and calculates a probability of those individuals reaching those goals. As such, management of a company can use the calculated probability to take reparative action to change the individuals assigned to attain a desired goal. In addition, the present invention allows the competence of a company in relation to its goals to be presented clearly and reliably to the owners. (Application, pg. 4, lines 4-20; FIGS. 1-8).

As explained in the specification, the present invention may be used for several other useful, concrete and tangible results. For example, the invention can be used in determining the probability of improving product sales by way of evaluation of customer relations and product development needs. (Application, pg. 4, lines 22-34). The invention can also be used in analyzing different strategic processes in the industry, such as make or buy-analysis or development analysis of a company. For example, as discussed on page 15, line 32 - page 16, line 22, of the specification and shown in FIG. 10, a company's development investments can be analyzed in relation to the company's turnover using the present invention.

The invention is also applicable with processes where the process parameters, such as temperatures, pressure, content etc. are measured. As explained in the specification, these parameters can be situated on scales formulated for these processes and a probability for a followed event's occurrence is calculated. By setting alarm boundaries at desired points, the process may be altered when the calculated probability for process failure increases. (Application, pg. 16, lines 24-32).

Support for new Claims 31-48 can be found throughout the specification and drawings as originally filed.

Therefore, it is respectfully requested that the rejections of Claim 11-30 under 35 U.S.C. §101 be reconsidered and withdrawn. It is also respectfully submitted that Claims 31-48 are directed to statutory subject matter.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

In the Office Action, Claims 11-14, 20, 21-24 and 30 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Publication No. 20020099585 to Locke (*Locke*). Applicant respectfully disagrees.

New independent Claim 31 recites, in part, a method of controlling and optimizing a process that includes forming a plurality of line segments representing a plurality of initial information, each of the plurality of line segments having a length corresponding to a first criteria value of each of the plurality of initial information, plotting each of the plurality of line segments on an equidistant dualistic scale at an angle corresponding to at least one of a second criteria, calculating a probability value for achieving an expected result from the process using the plotted line segments, modifying at least one of the initial information and control information by adjusting the plotted line segments on the scale in response to the probability value, and controlling the process using the modified at least one initial information and control information . New independent Claim 40 recites a similar recitation.

Locke relates to an apparatus, method and computer program product for use in managing the cost of a business process. As explained in connection with FIG. 2, *Locke* discloses an optimization process using cost functions. In particular, the process divides the cost function into continuous sections (step 202) which are then separated from each other by discontinuities. Discontinuities include features such as abrupt changes in slope or value, and the like. Next, the process chooses control points in each section (step 204). A control point is chosen at each end of each section. Additional control points are chosen at intermediate points. The number and location of the intermediate control points is selected according to the desired accuracy for the optimization. Next, the process generates one or more approximations for each section based on the control points in that section (step 206). Each pair of adjacent control points within a section defines an interval. In one implementation, the process generates an approximation for each interval. The process generates each approximation by calculating an interpolation function. For example, in one implementation, the type of interpolation function used is a cubic spline. As discussed later in the disclosure, in other implementations, the interpolation technique chosen is "triangular interpolation."

The process then calculates the point of minimum cost for each approximation (step 208) and then selects the point of minimum cost having the lowest value (step 210). (*Locke*, pg. 2, paragraph 34 through pg. 3, paragraph 48).

It is submitted that although *Locke* relates to managing business process costs, nothing in *Locke* discloses or suggests a method or apparatus for controlling and optimizing a process as recited in Applicant's pending Claims. While *Locke* discloses approximation techniques to optimize cost functions, those techniques are very different from the techniques disclosed in Applicant's application and recited in the pending Claims. In particular, nothing in *Locke* discloses or suggests forming a plurality of line segments representing a plurality of initial information, each of the plurality of line segments having a length corresponding to a first criteria value of each of the plurality of initial information. In addition, nothing in *Locke* discloses or suggests plotting each of the plurality of line segments on an equidistant dualistic scale at an angle corresponding to a second criteria and calculating a probability value for achieving an expected result from the process using the plotted line segments. Nor is there anything in *Locke* that discloses or suggests modifying at least one of the initial information and control information by adjusting the plotted line segments on the scale in response to the probability value, and controlling the process using the modified at least one initial information and control information, as now recited in Claim 31. Furthermore, nothing in *Locke* discloses or suggests an apparatus to control and optimize a process as now defined in Claim 40.

In view of the cancellation of Claims 11-14, 20, 21-24 and 30 and foregoing remarks, Applicant respectfully requests that the rejection of Claims 11-14, 20, 21-24 and 30 be reconsidered and withdrawn.

Accordingly, Applicant respectfully submits that new independent Claims 31 and 40, and those claims depending therefrom, are patentably distinguishable from the references of record and should be allowed at least for the same reasons.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

In the Office Action, Claims 15-19 and 25-29 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Locke*. Applicant respectfully disagrees.

As per Claim 15, the Office Action admits that *Locke* fails to explicitly teach “determining a radius length for said vector-based scale by multiplying a pre-determined maximum value associated with said first type of information by a number of said values” but alleges that it would have been obvious to modify *Locke* to incorporate these features in order to best evaluate the optimal points for the business process, which is a goal of *Locke*. Applicant respectfully disagrees with this assertion.

New Claim 35 recites, in part, “determining a radius length for said equidistant scale by multiplying a pre-determined maximum value associated with said plurality of initial information by a number of said plurality of initial information.” New Claim 44 recites a similar recitation. As explained in the disclosure and shown in FIGS. 4-5 and 8-10, the size of the scale is shown as units of measurement of the radius.

The Examiner’s rejection of Claim 15 is based on the imposition of an element which is not associated with a Cartesian coordinate system as disclosed in *Locke*, namely a radius. It is well known that the Cartesian coordinate system is used to determine each point uniquely in a plane through two numbers, usually called the *x-coordinate* and the *y-coordinate* of the point. To define the coordinates, two perpendicular directed lines (shown as the *x-axis* the *y-axis* in FIGS. 1 and 3 of *Locke*), are specified, as well as the unit length, which is marked off on the two axes. Cartesian coordinate systems can be used in space where three coordinates are used, as shown in FIG. 4 of *Locke*, as well as higher dimensions. There is no motivation to modify *Locke* to incorporate the feature “determining a radius length for said equidistant scale by multiplying a pre-determined maximum value associated with said plurality of initial information by a number of said plurality of initial information.” In contrast, the present invention uses a scale, the dimensions of which are naturally determined by a radius. Thus, the Examiner appears to be relying on his own recently-gained knowledge of Applicant’s invention to impose unwarranted modifications in the cited reference.

As per Claim 16, the Office Action admits that *Locke* fails to explicitly teach “calculating an angle value based on a said second type of information”, but alleges that it

would have been obvious, at the time of the invention, to one of ordinary skill in the art to modify *Locke* to incorporate the feature of “calculating an angle value based on a said second type of information” in order to enable a user to accurately and properly determine the necessary values to optimize the process. Applicant respectfully disagrees with this assertion.

As disclosed in *Locke*, in one embodiment, the cost function precisely describes the cost per unit of time to maintain the entire stock of a SKU in a warehouse as a function of the replenishment quantity. (*Locke*, pg. 1, paragraph 16). The Examiner’s contention that it would have been obvious to modify *Locke* to incorporate the feature of “calculating an angle value based on a said second type of information” in order to enable a user to accurately and properly determine the necessary values to optimize the process is clearly wrong. Any type of modification of the cost function values would destroy the relationship between cost per time and replenishment quantity as required in the reference. As such, *Locke* clearly provides no motivation to incorporate Applicant’s disclosed feature. In fact, *Locke* teaches away from Applicant’s disclosed features by using a Cartesian coordinate system. Thus, the Examiner again appears to be relying on his own knowledge gleaned from Applicant’s disclosure to impose modifications in the cited reference.

As per Claim 17, the Examiner states that *Locke* teaches “summing vectorally a plurality of line segments mapped on said scale” and that although *Locke* fails to explicitly teach “dividing said vector sum by said radius length”, it would have been obvious to one of ordinary skill in the art to modify *Locke* to incorporate the feature “dividing said vector sum by said radius length.” Applicant respectfully disagrees.

New Claim 36 recites, in part, “summing vectorally said plurality of line segments plotted on said scale; and dividing said vector sum by said radius length.” New Claim 45 recites similar limitations.

As explained previously, the technique for summing vectorally the line segments plotted on the scale is succinctly described in formula 6 of the disclosure. In particular, the technique used by the invention to sum the line segments vectorally is defined in the disclosure by the following formula:

$$K_{RI} = \sum_{i=1}^{Nx} P_i * \sin\left(\frac{\pi}{8} * S_i\right)$$

where

P_i is the measured potential of each team member represented by a line segment length on the graph;

S_i is the commitment value for each team member;

$\frac{\pi}{8}$ is the angle interval of the scale; and

$(\frac{\pi}{8} * S_i)$ is the angle of the line segment.

Applicant respectfully submits that *Locke* does not disclose or provide any motivation to sum vectorally line segments plotted on any type of scale. In fact, *Locke* teaches away from vector arithmetic and instead discloses interpolation techniques to optimize business process cost functions represented by a set of points in a Cartesian coordinate system. Furthermore, not only does *Locke* not disclose or provide any motivation to calculate a vector sum, the contention that it would have been obvious to one of ordinary skill in the art to incorporate the feature of “dividing the vector sum by said radius length” must fall as a radius is meaningless in the context of *Locke*’s Cartesian coordinate system.

As per Claim 19, The Examiner admits that *Locke* does not expressly teach the specific data recited, but that these differences are only in alleged non-functional descriptive material and are not functionally involved in the steps recited nor do they alter the recited structural elements.

New Claim 38 recites, in part, “associating a work ability with each of said plurality of initial information; and associating a commitment level to obtaining an optimized result to each of said plurality of control information.” New Claim 47 recites similar limitations.

Applicant respectfully submits that new Claims 38 and 47 do not contain non-functional descriptive material and should be allowed for at least this reason.

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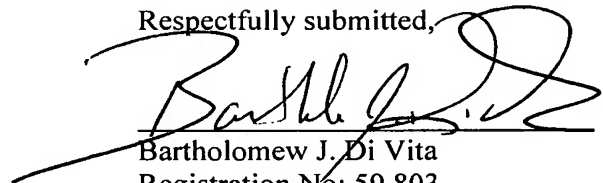
Accordingly, Applicant respectfully submits that new dependent Claims 35-39 and 44-48 are patentably distinguishable from the references of record. In addition, in view of the cancellation of Claims 15-19 and 25-29, Applicant respectfully requests that the rejection of Claims 15-19 and 25-29 be reconsidered and withdrawn.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing Amendments and remarks, entry of the Amendments to Claims 31-48; and favorable consideration and allowance of pending Claims 31-48 are respectively and earnestly solicited.

Respectfully submitted,


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